

## Multi-Use Non-Intrusive Flow Characterization System (FCS), Phase II

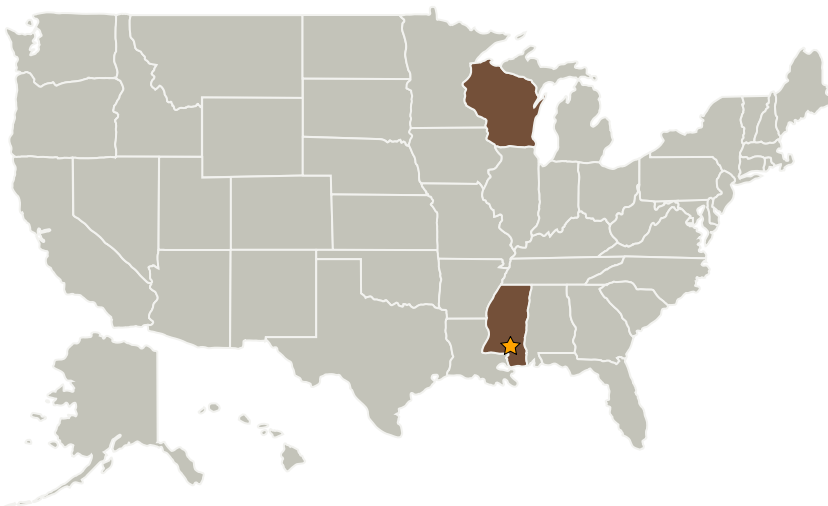


Completed Technology Project (2004 - 2006)

## Project Introduction

The product of the Phase II effort will be a Multi-Use Non-Intrusive Flow Characterization System (FCS) for densified, normal boiling point, and two-phase cryogenic flows, capable of accurately measuring several fluid parameters in real-time. Cryogenic fluids are ubiquitous in the aerospace industry; however, adequate flow instrumentation to support terrestrial, in-space, and planetary operations is currently unavailable. FCS was originated to address this issue and greatly enhance the quantification, reliability, and safety of propulsion test operations, as well as reduce operational expenses. FCS will also play a significant role in initiatives for the exploration of the Moon and Mars through supporting the design, development, and operation of gravity-dependant processes. FCS handles both transient and steady state flows, and can operate in the following five modes: (1) on-line analysis of fluid mixtures; (2) mass flow rate measurement; (3) temperature measurement; (4) fluid conditioning and health monitoring; and (5) model validation for a cryogenic or non-cryogenic fluid flow. The Phase II effort will develop an FCS system that has broad application throughout NASA and the rest of the aerospace community. A fully functional FCS system will be delivered to NASA/SSC upon completion of the program for use in the E1 or other facility.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Stennis Space Center (SSC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

## Primary U.S. Work Locations

Mississippi	Wisconsin
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## Project Management

## Program Director:

Jason L Kessler

## Program Manager:

Carlos Torrez

## Technology Areas

## Primary:

- TX14 Thermal Management Systems
  - └ TX14.1 Cryogenic Systems
    - └ TX14.1.5 Cryogenic Analysis, Safety & Properties